

REMARKS

The Examiner's Action mailed on December 21, 2005, has been received and its contents carefully considered. Additionally attached to this Amendment is a Petition for a One-month Extension of Time, extending the period for response to April 21, 2006.

In this Amendment, Applicants have editorially amended Claim 1 and 4, Claims 1 and 5 are the independent claims, and claims 1-7 remain pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

Claims 1-5 and 7 were rejected under 35 USC § 103 (a) as obvious over Frederiksson (US 6,467,039 B1) in view of Chang et al. (US 5,692,019) and Ling et al. (US 6,172,970 B1). This rejection is respectfully traversed.

Claims 1 and 5 are the independent claims, and both recite “at least one *second receiver* that is operable parallel to the first receiver” as well as parts of the industrial equipment being “*widely displaced* from one another”(emphasis added). Claim 1, as amended, also recites “a continuous control connection from the transmitter to at least the first receiver is established for the purpose of converting control signals of the transmitter into working movements of the industrial equipment when at least one of the receivers directly receives the control signals of the transmitter” and claim 5 recites “when a control connection between the transmitter and the first receiver can not be established, a control connection from the transmitter to the *second receiver* can be established” (emphasis added).

Frederiksson is directed to a control or supervision system using CAN protocol, and in the embodiment of FIG. 11 discloses cranes **1101-1103** provided with radio units **1r-3r** respectively and crane operators **1104-1106** each having a monitoring/control unit **4i-6i** respectively, each monitoring/control unit **4i-6i** having a radio, although not shown separately.

The Office Action admits that Frederiksson “is silent on at least one second receiver that is operable parallel to the first receiver, the receivers being arranged with parts

of the industrial equipment widely displaced from one another”, and alleges that the claimed invention would have been obvious in view of Chang et al. and Ling et al.

Both Chang et al. and Ling et al. relate to diversity reception, and illustrate the two common methods of making use of multiple antennas for this purpose, i.e. either switching between antennas or combining antenna outputs. Chang et al. is directed to receiving a signal from two transmitters **210** and **220** simulcasting the same signal by using a single receiver **430** that is selectively connected to two receiving antennas **410** and **412** via an antenna switch **420**, switching between the two antennas according to signal strength. Ling et al., on the other hand, is directed to a diversity receiver that combines the signals from two antennas **ANT. 1** and **ANT. 2**, adjusting the relative amplitude and phase of the two signals before combining them.

Neither Chang et al. nor Ling et al. uses a *second receiver* as claimed here, but merely a single receiver with two antennas. Diversity reception can be achieved by having cross-polarised antennas, or by having antennas separated by a distance that is significant in terms of the wavelength of the signal, so that in multi-path reception the correlation between the signals at each antenna is minimized. Although it depends on the wavelength, the antenna separation necessary for diversity reception is relatively small, i.e. the antennas are not *widely displaced*, and only a single receiver is needed.

In contrast, the present invention addresses an entirely different problem, that of providing control of industrial equipment over a relatively wide area, such that a single receiver cannot cover the whole area, either because of range limitations, and/or because of obstructions blocking the signal, as commonly found in building construction.

A non-limiting example according to the present invention is shown in the sketch attached as Appendix A to this amendment, in which A illustrates the arrangement shown in FIG. 1A and B illustrates the arrangement shown in FIG. 1B.

In this non-limiting example, a first receiver **TR2** connected to a controller may receive a control signal from a transmitter **TR1** either directly or via a second receiver **TR3**, which may, for example, be connected to the first receiver via a control line **30**, or via radio. The transmitter **TR1** and the first and second receivers **TR2** and **TR3** may actually be parts of transceivers. See, for example, page 4, lines 12-21 of the specification.

The difference between using a single receiver with two antennas versus using two receivers is significant where the parts of the industrial equipment are *widely displaced*, as the losses and background noise in antenna feeders are proportional to length, and are also considerably higher at radio frequencies than at lower frequencies that could be used in control lines.

As neither Chang et al. nor Ling et al. discloses a *second receiver* as claimed in claims 1 and 5, they also fail to disclose “a continuous control connection from the transmitter to at least the first receiver is established for the purpose of converting control signals of the transmitter into working movements of the industrial equipment when at least one of the receivers directly receives the control signals of the transmitter” as in claim 1. That is, as neither Chang et al. nor Ling et al. discloses a *second receiver*, a continuous control connection cannot be established to the first receiver if only the second receiver is able to receive the transmitter.

Neither do Chang et al. or Ling et al. disclose that “when a control connection between the transmitter and the first receiver can not be established, a control connection from the transmitter to the *second receiver* can be established” (*emphasis added*) as in claim 5. Neither Chang et al. nor Ling et al. discloses a *second receiver* in the first place, only a single receiver with two antennas.

Claim 6 was rejected under 35 USC § 103 (a) as obvious over Frederiksson (US 6,467,039 B1) in view of Chang et al. (US 5,692,019) and Ling et al. (US 6,172,970 B1), and further in view of Wenzel (US 2003/0058087 A1). This rejection is also respectfully traversed.

Claim 6 is allowable as it is dependent from claim 5 and Wenzel et al. does not supply the deficiencies in Frederiksson, Chang et al. and Ling et al.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should the remittance be accidentally missing or insufficient, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,

April 6, 2006

Date



Alun L. Palmer – Reg. No. 47,838

RABIN & BERDO, P.C.

CUSTOMER NO. 23995

Telephone: 202-371-8976

Telefax: 202-408-0924

E-mail: firm@rabinchamp.com

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